CLAIMS

1. A glass composition comprising:
a bismuth oxide;
an aluminum oxide; and
a glass network former,
wherein the glass network former includes an oxide other than a silicon oxide as its main component, and the glass composition emits fluorescence in an infrared wavelength region through irradiation of excitation light, with bismuth contained in the bismuth oxide functioning as a fluorescent source.

2. The glass composition according to claim 1, wherein the main component of the glass network former is a phosphorus pentoxide, a boron oxide, a germanium oxide, or a tellurium dioxide.

3. The glass composition according to claim 1, having an optical absorption peak in a wavelength range of 400 nm to 900 nm.

4. The glass composition according to claim 1, wherein a wavelength at which the maximum intensity of the fluorescence that is emitted through the irradiation of excitation light having a wavelength in a range of 400 nm to 900 nm is obtained is in a range of 900 nm to 1600 nm.

5. The glass composition according to claim 4, wherein a half-height width with respect to the wavelength of the fluorescence is at least 150 nm.

6. The glass composition according to claim 1, providing a gain in signal light amplification in at least a part of a wavelength range of 900 nm to 1600 nm through the irradiation of excitation light.

7. The glass composition according to claim 1, further comprising a univalent or divalent metal oxide.

8. The glass composition according to claim 7, wherein the divalent metal oxide is at least one selected from the group consisting of MgO, CaO, SrO, BaO, and ZnO.

9. The glass composition according to claim 7, wherein the univalent metal oxide is at least one selected from the group consisting of Li_2O, Na_2O, and K_2O.

10. The glass composition according to claim 7, wherein the content of the metal oxide that is univalent or divalent is in a range of 3 mol% to 40 mol%.

11. The glass composition according to claim 1, wherein the content of the bismuth oxide is in a range of 0.01 mol% to 15 mol% in terms of Bi_2O_3.

12. The glass composition according to claim 11, wherein the content of the bismuth oxide is in a range of 0.01 mol% to 5 mol% in terms of Bi_2O_3.

13. The glass composition according to claim 1, wherein the content of the aluminum oxide is in a range of 5 mol% to 30 mol%.

14. The glass composition according to claim 1, wherein the content of the main component of the glass network former is in a range of 30 mol% to 90 mol%.

15. The glass composition according to claim 2, comprising the following components, indicated by mol%:

30 to 90 B_2O_3;
5 to 30 Al_2O_3;
0 to 30 Li_2O;
0 to 15 Na_2O;
0 to 5 K_2O;
0 to 40 MgO;
0 to 30 CaO;
0 to 5 SrO;
0 to 5 BaO;
0 to 25 ZnO;
0 to 10 TiO_2; and
0 to 5 ZrO_2,

wherein the total of $MgO+CaO+SrO+BaO+ZnO+Li_2O+Na_2O+K_2O$ is in a range of 3 mol% to 40 mol%, and

the content of the bismuth oxide is in a range of 0.01 mol% to 15 mol% in terms of Bi_2O_3.

16. The glass composition according to claim 2, comprising the following components, indicated by mol%:

50 to 80 P_2O_5;
5 to 30 Al_2O_3;
0 to 30 Li_2O;
0 to 15 Na_2O;
0 to 5 K_2O;
0 to 40 MgO;
0 to 30 CaO;
0 to 15 SrO;
0 to 15 BaO;
0 to 15 ZnO;
0 to 10 TiO_2;
0 to 5 ZrO_2; and
0 to 20 SiO_2,

wherein the total of $MgO+CaO+SrO+BaO+ZnO+Li_2O+Na_2O+K_2O$ is in a range of 3 mol% to 40 mol%, and

the content of the bismuth oxide is in a range of 0.01 mol% to 15 mol% in terms of Bi_2O_3.

17. An optical fiber comprising a glass composition according to claim 1.

18. A light amplifier comprising a glass composition according to claim 1.

19. A method of manufacturing a glass composition according to claim 1, comprising:

melting a raw material of the glass composition; and

cooling the raw material that has been melted,

wherein the method further comprises, before melting the raw material, a heat treatment step in which a first material that contains ammonium salt and that is at least a part of the raw material is maintained at a temperature at which at least the ammonium salt decomposes.

20. The method of manufacturing a glass composition according to claim

19, further comprising, after the heat treatment step but before the melting step, a step of mixing the first material with a second material that includes a raw material of bismuth oxide or a bismuth oxide.

21. A method of amplifying signal light by allowing excitation light and signal light to enter a glass composition according to claim 1 to amplify the signal light.